

OPERATING INSTRUCTIONS
PHYSIOTHERM-S



00916 GB

PHYSIOMED®

TECHNOLOGY FOR THERAPY

The technical data in this manual is as at the time of printing and subject to alteration.

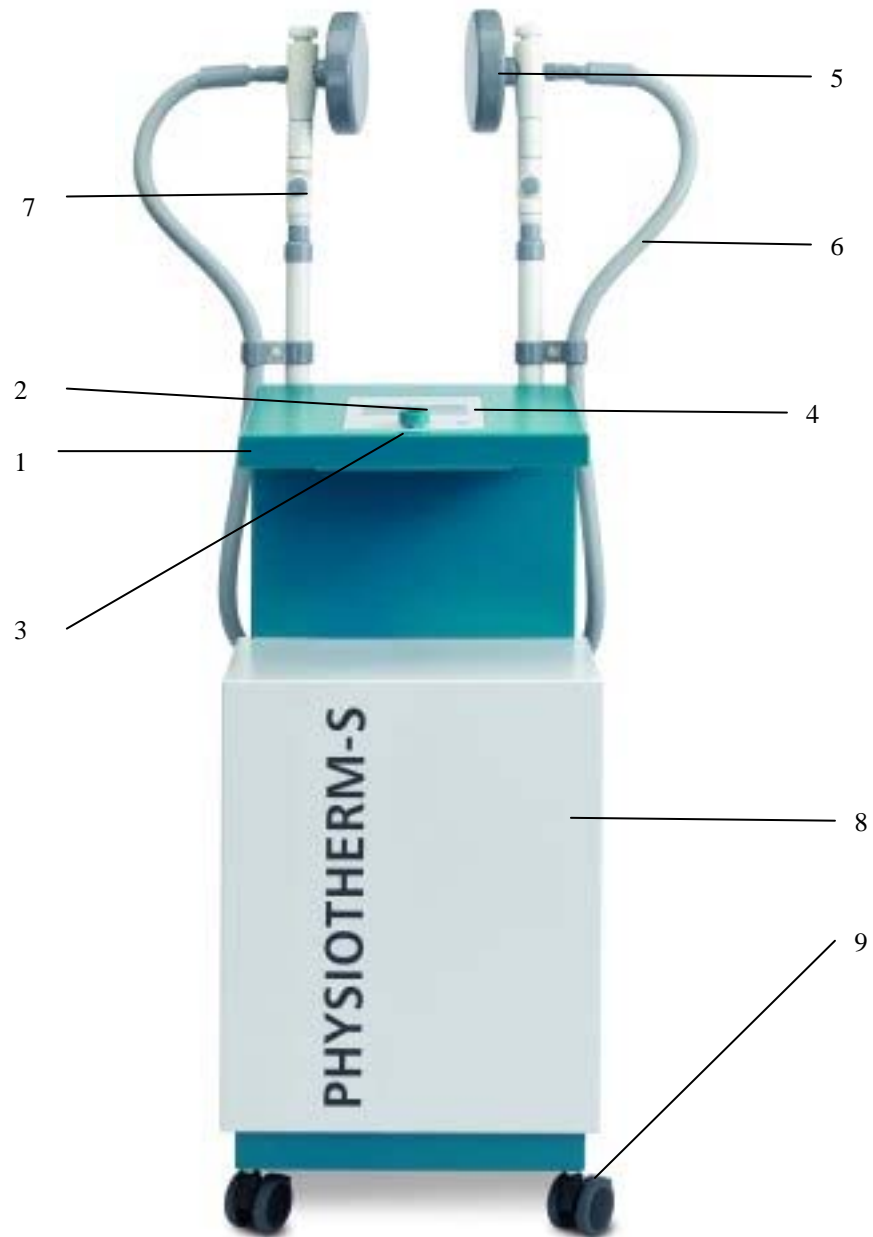
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Instrument Overview

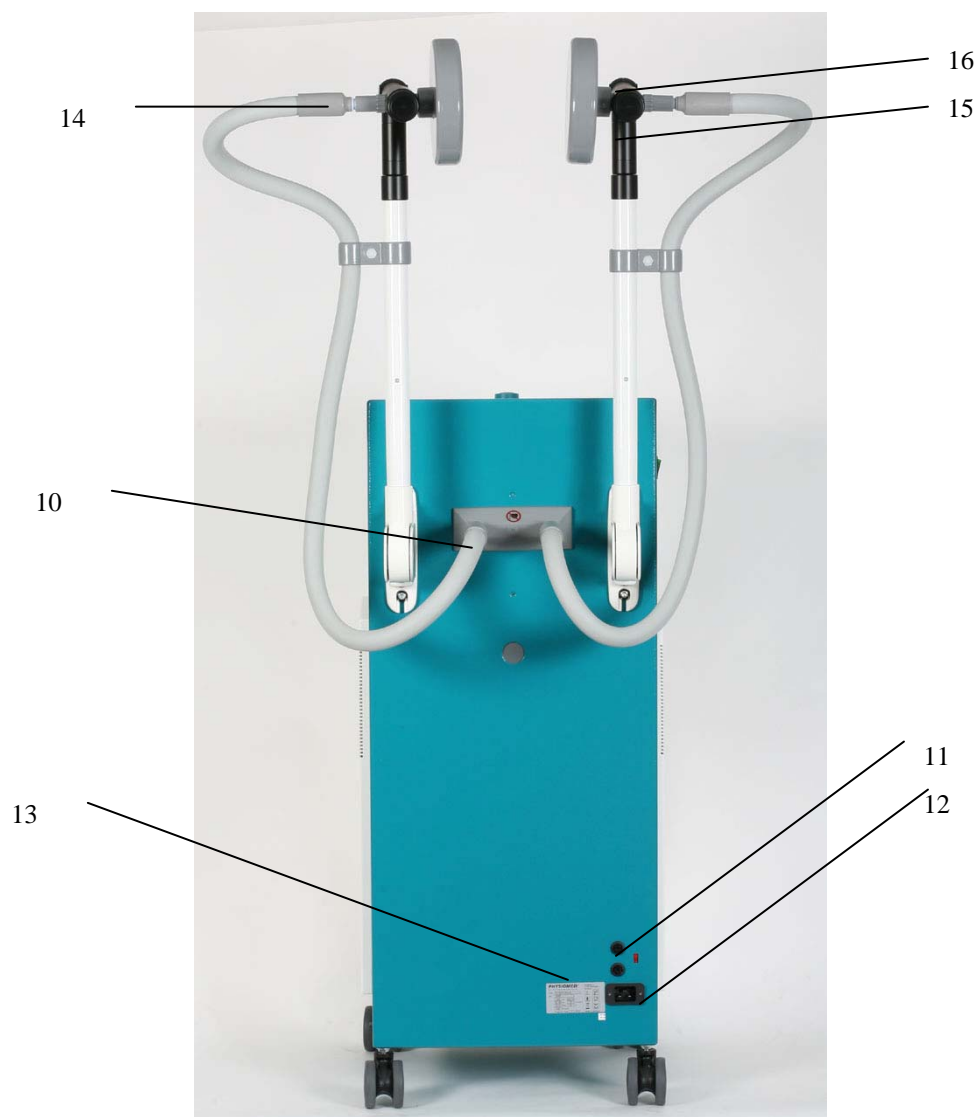
Operator side



Legend



1	Power switch	6	Electrode connection cable
2	Graphic display	7	Extractable electrode arm
3	Data selector	8	Metal housing
4	Stop button	9	Locking castor
5	Plastic plate electrode		

Patient side



10 Male end of electrode cable	14 Female end of electrode cable
11 Fuses	15 Adjusting element for electrode-skin distance
12 High-load non-heating appliance plug	16 Locking screw
13 Rating plate	

Symbols

	CAUTION! Please refer to the operating instructions and consider the physiological effects!
	Type BF component, not connected to protective ground wire!

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1 Introduction

With your **PHYSIOTHERM-S**, you have acquired a high-quality and extremely versatile unit for short wave therapy.

The instrument will only show its true potential, however, if you are well informed about its functions. For this reason, carefully read the *Operating Instructions* and familiarise yourself with the use of the instrument.

Warning



Safe operation of the short-wave therapy unit requires knowledge of both medicine and electricity.

For this reason, the short-wave therapy unit may be used only by persons with the appropriate knowledge and practical experience necessary to ensure proper handling of the unit and who have been properly trained in the use of the unit based on these operating instructions!

1.1 Instrument Description

The **PHYSIOTHERM-S** short-wave therapy unit can produce dielectric warming by means of electric or electromagnetic fields of varying intensity in practically any region of the body and can therefore be used for a wide variety of applications.

Treatments can be carried out using either the capacitor (dielectric field) or the coil (induction field) method.

In the dielectric field method, the body part to be treated is within the electric field between two plate electrodes. The "radiation" produces a warming of the body part located within the field. Fat layers are warmed considerably more than muscle tissue. When applying the induction field method, the body part is within a magnetic field, which warms especially tissue containing liquid located near the surface, such as muscles.

1.2 Application

The short-wave therapy unit is suitable for nearly all heat therapy processes for use in clinics and private practices.

Classical therapy applications can be conducted with the induction-field and dielectric-field methods in continuous or pulsed mode.

The application of high-frequency energy in heat therapy has the advantage of greater depth penetration as opposed to simpler methods, such as packs, baths, infrared light and heat cushions.

The endogenous heat that is formed triggers a series of physiological processes, producing a spasmolytic effect on muscles, tendons and other structures containing connective tissue, increasing the cell metabolism and the enzyme reaction speed and stimulating perfusion in the treated zone.

The capability of applying the high-frequency energy in short, intense pulses (pulsed mode) can further increase the depth effectiveness, especially the stimulation of perfusion, while the heat generation is hardly felt in the skin, which is more sensitive to heat.

The applications for the high-frequency therapy are diverse. This therapy is especially effective in treating rheumatic disorders of the joints and muscles, inflammatory disorders of the respiratory organs, the kidneys and bile ducts and all disorders due to insufficient perfusion. The pulsed mode is advantageous in the treatment of acute conditions.

1.3 Contraindications

The following list of contraindications (which is by no means to be regarded as being comprehensive) should always be observed when applying short-wave treatment for therapeutic purposes!

- Always be sure to ask the patient about these contraindications, as not all contraindications are immediately recognizable by the therapist (e.g. pregnancy)!
- In addition, any external signs that might point to the existence of contraindications (e.g. scars, etc.) should always be reason enough to ask the patient about contraindications!
- As a rule, any short-wave therapy must be strictly based on an accurate diagnosis!

1.3.1 Absolute contraindications

The following indications are **absolute contraindications to short-wave therapy**:

- Patients with a cardiac pacemaker may under no circumstances be subjected to short-wave therapy. The effects of the applied high frequency on the pacemaker could cause ventricular fibrillation. Any other persons with pacemakers must also remain outside of the treatment area during the short-wave therapy!
- Patients whose condition could be negatively affected by heat
- Patients with tuberculosis
- Patients with haemorrhages or risk of haemorrhage
- Patients with septic conditions and emphysemas
- Patients with malignant tumours and tumours that are not yet identified¹

1.3.2 Local contraindications

The following indications are **local contraindications to short-wave therapy**:

- Implants or metal inclusions²

¹ According to Schneider (in ELEKTROMEDIZIN 7/62): Tissue and organ sections with inflammations, necroses, pus formation and abscesses. In such cases, the therapist must choose between the application of cold or heat in accordance with general pathological considerations, depending on the degree of inflammation. Inflammatory conditions that are still in statu nascendi are treated with cold. Inflammatory conditions with necroses and a cavitary tendency are treated with therapeutic means that generate heat and hyperemia. Chronic and unspecific inflammations are treated in the same way (heat and hyperemia), as this supports resorption, reparation and regeneration. Specific chronic inflammations (such as tuberculosis), however, are activated by heat. Accordingly, they represent a contraindication. The same applies in the case of malignant tumorous conditions. Heat application in the case of a tumorous disease can only be regarded as malpractice. Moreover, cardiac congestions must be removed prior to any heat application.

- Implants that could be impaired by short-wave irradiation
- Swellings that still feel warm
- Thermohyperesthesia
- Thermohypesthesia
- Acute inflammations
- Severe arterial obstructions (stage III and IV)
- Gynaecological disorders involving acute inflammation³
- Wetness, perspiration or damp bandages
- Permeating irradiation of the thorax in cases of severe heart diseases (heart valve diseases, myocardial insufficiency, myocardiac infarct, severe coronary sclerosis)
- Pregnancy, since irradiation of the abdomen could cause teratogenous damage due to alterations of blood circulation and diffusion
- During the menstrual cycle
- Sudeck's syndrome, stage I and II
- Basedow's disease (irradiation could cause serious states of agitation)
- Varicose veins (irradiation could cause congestive pain)

1.3.3 Of particular importance

Particular care must be taken if the patient's clothing is wet or damp, since the garments may heat up faster and more intensely than the patient's body. Synthetic fibres (perlon, nylon, etc.) are characterized by low absorbency, which can cause the skin beneath such fabrics to quickly become moist. Therefore, it is recommended that the body areas to be treated be completely unclothed and the patient's skin dried, particularly where perspiration accumulates in folds of the skin. This applies especially when a higher dosage is being applied. There is no danger, however, when applying short-wave irradiation to bandaged areas as long as the bandages are completely dry.

- When treating small children, particular care is obviously required, due to the low body weight. Very careful dosing and constant observation (manual checks of the skin temperature while the unit is switched off) are necessary.
- Since the effects of high-frequency fields on unborn life have not yet been sufficiently researched, we recommend that operators who are pregnant do not remain in the immediate vicinity of the applicator when the unit is activated.
- The output power must always be set according to the subjective response of the patient! Therefore, special care must be taken in case of patients with a diminished capacity for perception of heat (refer to section *Dosage levels according to Schliephake* on page 12).

Warning



We would like to point out that it is advisable to post warnings for wearers of pacemakers in the rooms where high-frequency therapy (e.g. short-wave therapy) is applied.

Moreover, a distance of at least 6 meters must be maintained between the unit and any low-frequency therapy that is being carried out at the same time!

² The higher conductivity of metals causes concentration of the field, producing a high temperature in the border area of the tissue. This in turn can cause excessive local heat, leading to (irreparable) third-degree burns. Therefore, caution is also necessary in case of long-existing metal inclusions, such as shell fragments.

³ Further contraindications relating to gynaecological disorders include (see Möbius, Gynaecological University Clinic, Jena): genital tuberculosis, endometriosis, pyosalpinx or pyo-ovarium, tubal carcinoma.

2 Controls and Indicators

As its LCD is divided in different function fields, **PHYSIOTHERM-S** allows for clear and easy operation.

The metal housing protects the electronic components and simplifies cleaning.

Safety-related components are continuously monitored by the microprocessor, erroneously initiated operating steps are suppressed, a self-test routine is performed after switching on and possible malfunctions are displayed.

2.1 Function of Controls and Indicators

In the following section we will introduce some of the controls of **PHYSIOTHERM-S**. The numbers in angle brackets refer to the *Instrument Overview* at the beginning of this manual.

2.1.1 Display <2>



On the **display <2>**, you can select all of the instrument's menus and parameters on different levels. The selection is carried out with the **data selector <3>**.

2.1.2 Data Selector <3>



Use the **data selector <3>** to select the therapy parameters and to operate the instrument by means of the cursor. You can move the cursor to the other menu items by turning the selector to the right or left. To select a menu, simply press the selector. To select a parameter, move the cursor to the respective field by turning the selector. After pressing the selector, the cursor will start flashing. You will then be able to select the parameters by turning the selector and confirm the selected value by pressing the selector again (cursor stops flashing). The modified values are displayed at the respective position of the **display <3>**.

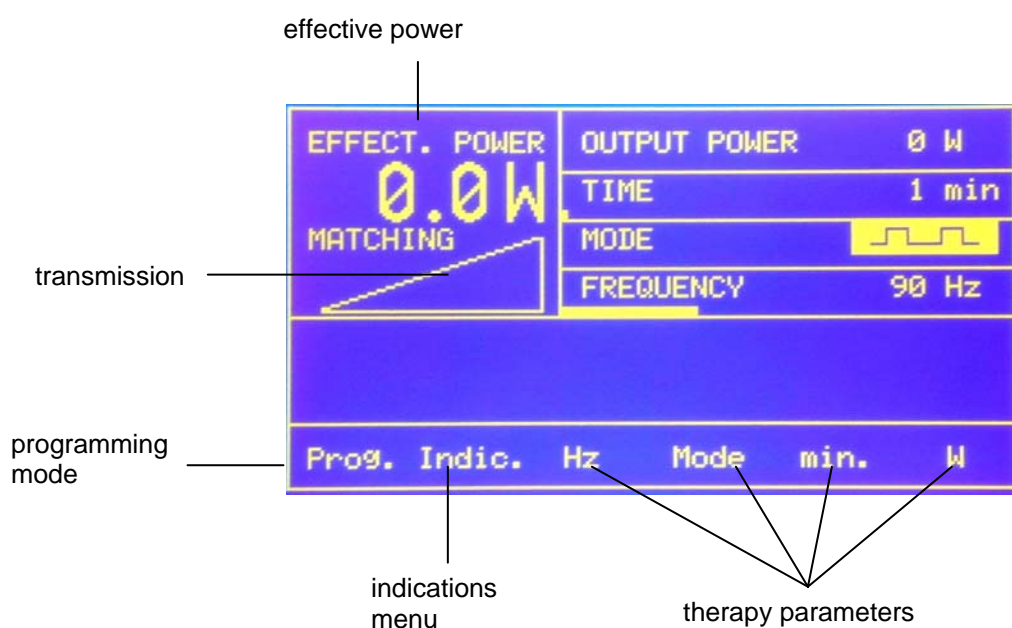
2.1.3 Stop Button <4>



The **stop button <4>** is used to interrupt a therapy session. Press the **stop button <4>** if you want to stop treatment before the selected therapy time has elapsed.

2.2 Overview of Parameters

2.2.1 Start Menu



3 Installation

3.1 Requirements for installation

Before the unit can be installed and put into operation, certain requirements must be fulfilled in the building where the unit is to be operated.

If the unit cannot be installed immediately after delivery, the unit and its external components or accessory elements must be stored in their original packaging in a dry place!

Do not store or operate the unit in a dusty environment!

3.2 Requirements of the installation location

The unit must be installed so that there is no danger to the patient, the operator or other persons!

Therefore, you must read the safety instructions in section *General Notes* on page 46 and the following information:

- By selecting a suitable location for setting up the unit or by means of structural measures, contact during the treatment by the personnel or the patient with conductive materials that are earthed or have a high capacity to earth must be prevented (e.g. heating pipes, water faucets, metal chairs, metal beds or other earthed devices).
- The unit must be set up so that the (normal) release of electromagnetic radiation during operation does not hinder the function of other devices or data media. The minimum distance to other devices or their power supplies or data transfer lines is 6 meters! Please note that the radiation can easily pass walls, ceilings and floors.
- The room and the installation location must be large enough so that the unit can be operated from the front even if the electrodes are positioned inconveniently.

3.3 Transport of the unit

Measures concerning the transport of the unit from the manufacturer to the operator are based on the individual circumstances and are defined in the general terms of business.

In the event of subsequent transport of the unit, the dealer or the operator is responsible for the unit and for compliance with the safety and accident prevention regulations.

3.4 Unpacking the unit

The unit is generally delivered with the packaging material supplied by the manufacturer. Since the unit weight is about 60 kg, it must be unpacked by at least 2 persons!

Proceed as follows:

- (1) Position the transport packaging so that the UP mark is pointing upward.
- (2) Remove the safety bands from the transport packaging.
- (3) Remove the transport packaging upward.
- (4) Remove the remaining foam material.
- (5) Lift (at least two persons) the unit from the lower packaging element.

3.5 Inspection upon receipt

Immediately after unpacking the unit you should:

- (1) Verify the delivery documents to make sure that the delivery is complete.
- (2) Check the external components and accessories for possible damage due to transport.

Warning



In case of damage from transport that could endanger personal safety, the unit must not be connected to the power supply!

3.6 Damages

Claims for damages resulting from damage due to transport are valid only if the carrier **and** the manufacturer are notified without delay. The remedy of damages is generally carried out by the manufacturer (refer to *Service, Repairs, Maintenance* on page 49).

Prepare a damage report at once and send it to the carrier and to the dealer.

When returning the unit, include the following information:

- Name and address of the sender and receiver
- Type and serial number of the unit
- Description of the defect (damage report)
- Date and signature

4 Notes on operation

4.1 Preparing the unit

The unit has been completely assembled in the factory and is ready for use except for connection of the electrodes.

Proceed as follows in order to prepare the unit for operation:

- (1) Make sure that the voltage rating on the rating plate conforms to the system voltage of the building.
- (2) Insert the required electrodes into the recesses at the end of the electrode arms and fasten the electrodes with the locking screws.
- (3) Plug the electrode connection cable into the socket on the back of the unit. Attach the connecting cable in the cable holders on the electrode arms.
- (4) Set the power switch to the off position.
- (5) Plug the high-load connector for non-heating appliances into the corresponding socket on the back of the unit.

4.2 Check for operational safety

For your personal safety you should:

- Check the condition of the housing and the insulation of electrodes, electrode connection cable and the power supply cable. Also make sure that the cables have been routed correctly.
- Insert the power plug into an earthed (!) socket outlet.

Warning



The unit and the electrodes must be positioned so that there is no danger of personal injury! Therefore, you must read and observe the safety instructions in section *General Notes* on page 46 and the *Contraindications* on page 2 before putting the unit into operation!

4.3 Setting the Line Voltage



The instrument is equipped with a line voltage selector on the rear side (next to the line fuses). Use this selector to switch the line voltage of the instrument to 230 VAC or 115 VAC. It is not necessary to change the line fuses T16A.

4.4 Instrument Errors

If a functional error is detected during the automatic self-test routine or during operation, a corresponding note will be displayed on the LCD. A numeric error code will be shown, e.g. E02. Both operator errors and internal errors in the unit are displayed as an error code with text information.

4.4.1 Operator errors

The following operator errors might be displayed:

E01: Please check electrodes and cables

Cause: An optimum tuning point could not be found; therefore, the applicators, their ESD and the correct connection to the electrode cable should be checked again.

E02: Matching...Please wait!

Cause: For reasons of safety, the effective output must not be set higher than 100 W, as long as the tuning process is still in progress. The reason for this is that if tuning takes place at a higher effective output, heat can be clearly felt.

4.4.2 Internal errors

With the exception of temperature errors, the treatment must be stopped immediately in case of internal errors in the unit. The unit can only be switched off and on again by means of the **power switch <1>**. If the error message appears again, make a note of the error code, switch the unit off again and notify your authorized service partner.

In case of display failure or other obvious defects, switch the unit off immediately by means of the **power switch <1>** and notify your authorized service partner!

5 Short Wave Therapy

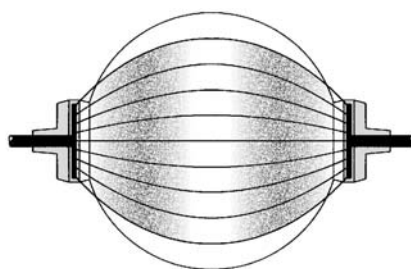
This chapter provides you with notes on positioning the electrodes and general information on starting a short wave therapy.

5.1 Positioning the electrodes

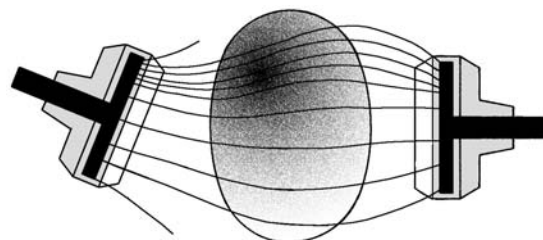
Electrodes have to be positioned on the part of the body to be treated according to the medical indication (refer to *Indications* on page 18).

The electrodes must be positioned so as to avoid overheating due to edge effects. The surfaces of the electrodes must be nearly parallel to the area being treated. It is possible, however, to use these edge effects for therapeutic purposes.

Warning If such an effect is desired, the dosage must be controlled very carefully!



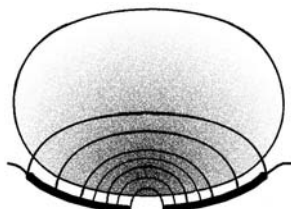
correct



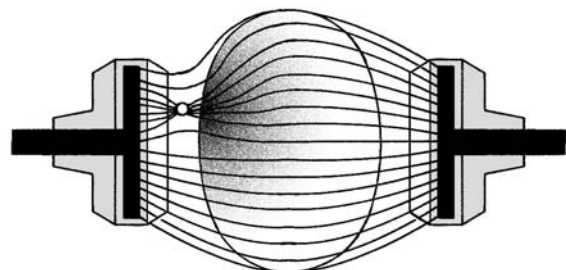
incorrect

Positioning of electrodes – edge effect

Local overheating can occur in the electric field due to one-sided application of electrodes or the presence of metal objects (e.g. earrings, metal implants).



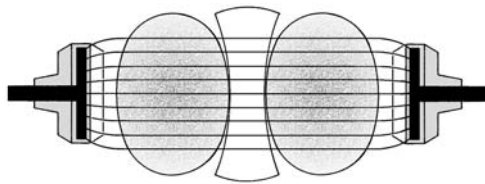
incorrect



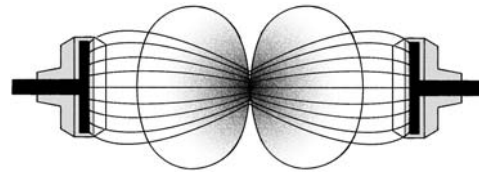
incorrect

Positioning of electrodes – edge effect and metal objects

Local overheating can also occur due to electrode constrictions. This can be prevented by increasing the distance (e.g. with pillows, felt layers) of the affected body part.



correct

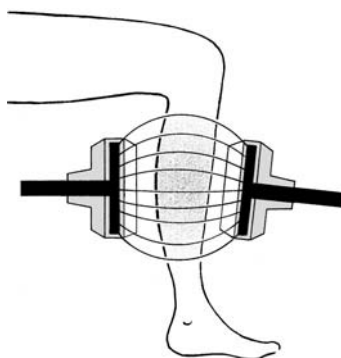


incorrect

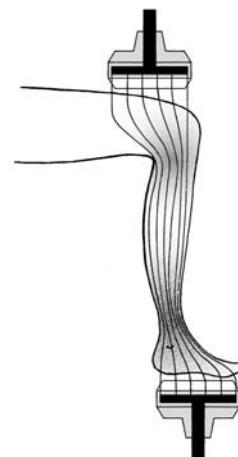
Positioning of electrodes – electrode constriction

Surface warming can be reduced by increasing the electrode distance. The use of the diode is recommended for local applications. It is also possible to achieve this, however, by using different electrode sizes and varying the positions.

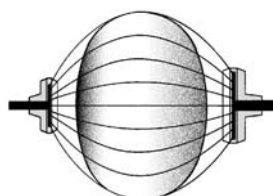
Below you will find several examples for correct placement of electrodes:



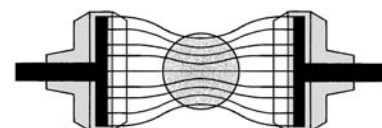
Even irradiation of extremities in the transverse field



Even irradiation of extremities in the longitudinal field



Uneven irradiation by the use of different electrodes



Even irradiation of areas of the trunk, the head or the extremities with a large electrode-skin distance

Positioning of electrodes – normal cases

5.2 Setting the intensity

5.2.1 Dosage levels according to Schliephake

The treatment instructions use the following dosage levels according to Schliephake:

Dosage Level	Sensation	Description
1	No perceptible heat	athermal, subliminal
2	Slight warming	heat just perceptible
3	Pleasantly warm	pleasant, tolerable perception of warmth
4	Strong warming	strong but still tolerable perception of heat

Heat perception	Treatment dosage			
	1	2	3	4
none				
low				
medium				
strong				

Dosage scheme according to Schliephake



Warning Always begin the treatment with an initially low dosage! After the treatment has been in progress for 1 – 2 minutes you can make the final setting based on the subjective response of the patient!

5.2.2 Effective Power

In order to prevent unbearable warming of tissue, the effective output power, as summarized in the following table, must not be exceeded!

Type of electrode	max. effective power
Diode	120 Watt
Diploide	200 Watt
Plate electrode Ø 80 mm	80 Watt
Plate electrode Ø 120 mm	200 Watt
Plate electrode Ø 165 mm	400 Watt
Rubber capacitor electrode 120 x 180 mm	250 Watt
Rubber capacitor electrode 145 x 250 mm	400 Watt

5.3 General information on starting a short wave therapy

PHYSIOTHERM-S offers you the following possibilities to start short wave therapy:

- direct access (as described here)
- starting via the **indications menu** with its treatment proposals for a multitude of applications (refer to page 15).
- starting via **individual programs** (created by yourself, refer to page 43).

5.3.1 Preparations

Before you start treatment:

- (1) Equip the instrument with the electrodes appropriate for the desired type of treatment.
- (2) Switch on the **power switch <1>**. After switching on, a short self-test is conducted. In case of an internal error in the unit, an error code is displayed in the text output field (refer to *Instrument Errors* on page 9).
- (3) Have the patient placed in the suitable position for treatment. Before attaching the electrodes, make sure that the intensity is turned down to 0!
- (4) Make sure that the electrodes are in the correct position (refer to section *Positioning the electrodes* on page 10).
- (5) Check for correct electrode-skin-distance (refer to section **Error! Reference source not found.** on page **Error! Bookmark not defined.**).

You are now ready to begin the treatment.

5.3.2 Beginning the treatment

Treatment is always started from the basic menu by turning up the output power by means of the **data selector <3>** from zero to the desired value. The treatment can be interrupted at any time by pressing the **stop button <4>**.

Warning Before beginning treatment, you must read and observe the safety instructions in section *General Notes* on page 46 and the *Contraindications* on page 2!



Begin treatment as follows:

- (1) Select the output parameters (frequency, mode, time). Use the data selector to move to one of the fields Hz, Mode and min. Then, press the data selector to choose the respective parameter. Dial to the required setting and press the data selector again to set the value.

- (2) Check the parameters for compliance with the desired type of therapy.
- (3) Select the output power parameter with the **data selector <3>**.
- (4) By turning the **data selector <3>**, **slowly** increase the output power. Observe the matching display and the well-being of the patient (verbal response).
- (5) Adjust the parameter setting during the treatment, if necessary.

Note

During active treatment it is not possible to switch directly from continuous mode (CW mode) to pulsed mode and vice versa.

- (6) Press the **stop button <4>** to interrupt the treatment or wait until the treatment duration has elapsed (signal tone).
- (7) Remove the electrodes and ask the patient how he feels.

6 Indications Menu

Apart from direct access to the individual therapy modes, the indications menu offers you another possibility to start the individual methods of treatment. With the indications menu, you may utilise proven methods of treatment within short wave therapy.

6.1 Starting a treatment via the Indications menu

All indications are assigned to a medical field (e.g. ORTHOPAEDICS, as in the following example). The image below shows the main menu after the unit is switched on.

Proceed as follows to start a treatment via the indications menu:



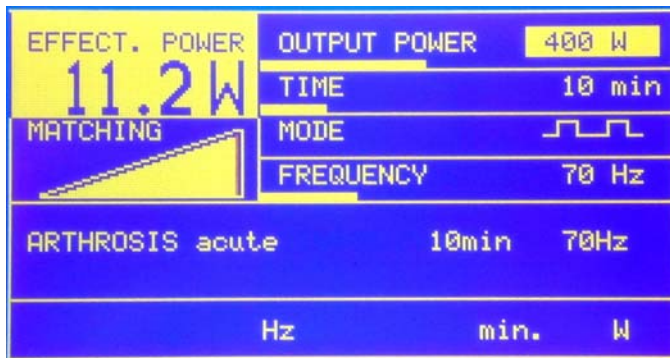
- (1) Prepare instrument and patient (refer to *Preparations* on page 13).
- (2) Select the function **Indic.** on the **display <2>**.

The main page of the indications menu is displayed:



- (3) Select via the function **Select** the desired indication from the main page of the indications menu, (e.g. ARTHROSIS acute). If the required indication does not appear in the list, you have to change the medical field (refer to *Selecting a medical field* on page 17).
- (4) If required, get additional information on the selected indication (refer to *Information on the selected treatment* on page 16).
- (5) Select the desired **OUTPUT POWER** (e.g. 400 W)

The display shows the selected indication and its proposed parameters. The therapy time elapses.



- (6) Press the **stop button <4>** to interrupt the treatment or wait until the treatment duration has elapsed (signal tone).
- (7) Remove the electrodes and ask the patient how he feels.

6.2 Information on the selected treatment

To get concise information on the applied treatment, proceed as follows:

- (1) Select the function **Indic.** from the **display <2>**.
- (2) Select the function **Info** from the display.



An illustration will be displayed resuming the main features of the applied treatment for you (e.g. dosage, duration etc., as well as the suggested parts of the body where you can attach the electrodes).

- (3) Select the function **Select** or **Esc** to return to the main menu.

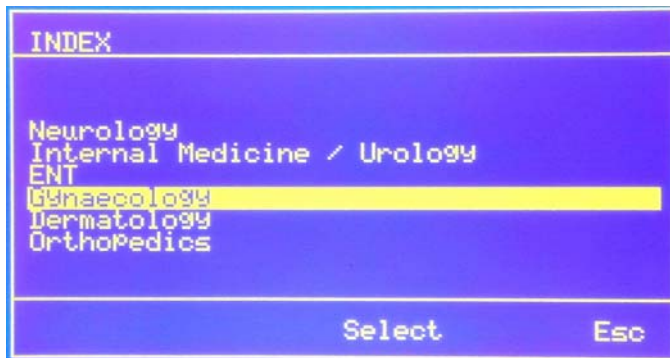
6.3 Selecting a medical field

Proceed as follows to select a medical field the indications menu:

(1) Select the function **Indic.** from the **display <2>**.

(2) Select by the function **Index** from the display.

The index page showing a list of medical fields will be displayed.



(3) Select by the function **Select** the desired medical field from the index, e.g. **Gynaecology**.

The indications of the recently selected medical field can now be selected.

7 Indications

On the following pages you will find a list of disorders that can be treated with short-wave therapy; the list is arranged according to medical fields and is also analogous to the unit software.

This indications table – which makes no claim to being comprehensive – contains empirical values as guidelines for short-wave therapy.

- The conventional method of even warming of all tissue layers by means of continuous transfer of energy is supplemented by successfully including new areas of application in the treatment due to the pulsed mode.
Based on experience in clinics and specialized practices, optimum results are achieved with a pulsed, thermal therapy especially in the case of acute illnesses.
- For illnesses that have not yet reached the chronic stage but have been present for some time, a pulsed, low-thermal application should be preferred.
- Continuous application is recommended in case of decidedly chronic conditions.
- When applying the short-wave treatment to small children, a very careful dosage and constant observation (manual checking of skin temperature when the unit is switched off) are necessary. Accordingly, small children should be fully undressed during the treatment.
- For surface therapy (skin and subcutaneous fat), a small distance is usually required between the electrode and the skin on the treatment side (active side) and a large distance on the opposite (passive) side.
- For depth therapy (inner organs, joints), a large electrode-skin distance is required on both sides.
- If the muscles or the joints are to be warmed more on one side, the use of the special electrode, or "diode", is recommended.
The "diode" is used in a monopole configuration, i.e. without a counter-electrode.

The duration of treatment (e.g. 5 – 20 minutes) should be short and with a small dosage at the beginning and can be gradually increased – depending on the tolerance of the patient. In case of severe reactions, the treatment should be interrupted and then reduced to a smaller dosage and a shorter duration.

7.1 Orthopaedics – Surgery / Neurology

- Disorders of the musculoskeletal system (bones, joints and muscles)
- Arthritis and arthrosis

In contrast to treatment with medication, electrotherapy is seldom applied to the various forms of arthritis and polyarthritis, since this is primarily a non-specific therapy. The goal of the therapy is primarily to alleviate pain and swelling.

7.1.1 Osteoarthritis

Definition:	Chronic joint disorders (knee, hip, shoulder, elbow, hand, foot and mandibular joints)
Goal of treatment:	analgesia, tone reduction, stimulation of perfusion
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), manual therapy, prevention of dysfunctional stress, cryotherapy



Heat therapy – short-wave (chronic)		
Mode	Continuous mode	
Applicator	Plate electrodes	
Location of treatment	Irradiation of painful joints	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	10 – 15 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue. Apply treatment in pain-free joint positions.	
Important!	Use heat therapy only if tolerable for patient!	

7.1.2 Chronic polyarthritis of the hip and shoulder joints

Definition:	Inflammation of more than one joint
Goal of treatment:	Pain relief, lessening of inflammation
Favourable combinations:	Physical therapy, immobilization and position to relieve pain, electrotherapy



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	Irradiation of painful joints	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	5 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	10 – 15 treatments

Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, it can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction field) electrodes rather than capacitor (dielectric field) electrodes is recommended.

7.1.3 Achillodynia

Definition:	Irritation of the Achilles tendon
Goal of treatment:	Stimulation of perfusion, elimination of functionally-impaired contractures, analgesia, trophic improvement
Favourable combinations:	Reduction of strain due to sports, heel cushions to alleviate symptoms, ultrasound, electrotherapy, cryotherapy and heat therapy

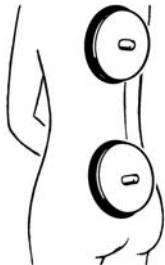


Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	Both sides of the Achilles tendon	
Electrode-skin distance	Left: 1 cm – 2 cm	Right: 1 cm – 2 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	12 – 15 treatments

Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, it can also be applied for 2 – 3 minutes in inflammatory condition.

7.1.4 Bechterew's disease

Definition:	Inflammatory, stiffening disorder of the spine and of the major joints
Goal of treatment:	Pain relief, local stimulation of perfusion, alleviation of muscular tension
Favourable combinations:	Combined therapy (electrotherapy / ultrasound), physical therapy, physical exercise, breathing exercises

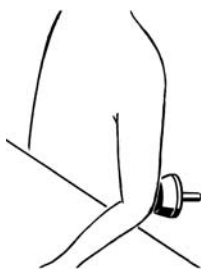


Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	Longitudinal irradiation of the spine	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	12 treatments

Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, it can also be applied for 2 – 3 minutes in inflamed or inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.

7.1.5 Bursitis

Definition:	Bursal synovitis
Goal of treatment:	Normal function without irritation
Favourable combinations:	Manual therapy: pain-relieving traction, mobilization below caudal, cryotherapy or cold compresses in acute condition. Histamine iontophoresis, heat therapy and ultrasound in chronic condition.



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode / pulsed mode subacute	
Applicator	Plate electrodes / diode	
Location of treatment	Above the joint	
Electrode-skin distance	Active: 1,5 cm – 2 cm Ø 8 cm	Passive: 2 cm – 4 cm Ø larger than active electrode
Duration of treatment	3 min – 10 min	Subacute: 10 min – 15 min
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 12 Watt middle power
Treatment interval	Every other day	8 – 12 treatments
Notes	Coil method (diode) in subacute phase	

7.1.6 Distortions, dislocations, contusions

Definition:	Twisted joints, overextended joints, sprains, dislocations (luxation), crushing, injury due to brute force (contusion), always consider the possibility of fracture!
Goal of treatment:	Pain relief, local stimulation of perfusion, hematoma resorption, luxations must first be set and immobilized until capsules are healed
Favourable combinations:	Electrotherapy, ultrasonic therapy, ice treatment in acute condition

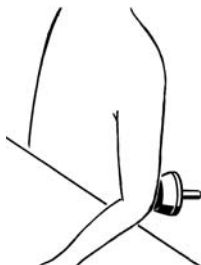


Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode; diode (subacute)	
Location of treatment	Irradiation of the joint	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	5 min – 10 min	Subacute: 10 min – 15 min
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 12 Watt middle power
Treatment interval	Daily	5 – 10 treatments
Important!	Contraindication: Heat therapy in all acute phases, fresh haematoma!	

The use of coil (diode / dipole) electrodes rather than capacitor (dielectric-field) electrodes is recommended.

7.1.7 Epicondylitis

Definition:	Tennis elbow, inflammation of tendon attachments on cubital or radial part of elbow joint (humeral)
Goal of treatment:	Pain relief, elimination of irritation
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), ice treatment, heat therapy only in chronic condition



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	diode	
Location of treatment	Lateral irradiation of joint	
Electrode-skin distance	Electrode in contact with skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	Subacute: Dosage: 1 16 Watt middle power
Treatment interval	Daily	5 – 10 treatments
Important!	Contraindication: Heat therapy in all acute phases!	

7.1.8 Facial paralysis (peripheral)

Definition:	Paralysis of the nervus facialis
Goal of treatment:	Accelerated healing, facilitation of new innervation
Favourable combinations:	Electrotherapy, heat therapy, keep face warm, passive or passive-active exercise in front of a mirror



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	diode	
Location of treatment	Above the nerve end	
Electrode-skin distance	Electrode in contact with skin	
Duration of treatment	3 min – 8 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	up to 12 treatments
Notes	Short-wave therapy for nervus facialis aftercare	
Important!	In case contractures occur, the electric therapy must be stopped immediately!	

7.1.9 Fracture

Definition:	Broken bones
Goal of treatment:	Accelerated callus formation, especially in case of fractures that heal poorly
Favourable combinations:	Ultrasonic therapy, heat therapy Electrotherapy: training of the atrophied muscles



Heat therapy – short-wave (for fractures that heal poorly)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes	
Location of treatment	Locally, above the fracture	
Electrode-skin distance	Active: 2 cm	Passive: 4 cm
Duration of treatment	3 min – 5 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	10 treatments
Notes	The short-wave therapy accelerates and improves callus formation. Additional segmental application, dosage 1, 3 min., is always favourable.	
Important!	Do not apply short-wave treatment in case of fresh haematoma or nailing!	

7.1.10 Intercostal neuralgia

Definition:	Nerve pain. Acute, painful irritation starting from the thoracic spine. Possible causes of this are nerve root compressions and acute blockages in the area of the kinetic elements or the joint faces of the vertebral bodies.
Goal of treatment:	Pain relief
Favorable combinations:	Galvanization, Stanger baths, iontophoresis, heat therapy, ultrasonic therapy. Injections with local anaesthetics in the paravertebral muscles is a tried and tested treatment.



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Longitudinal stimulation in the nerve end	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2	Acute: Dosage 1
Treatment interval	Every other day	12 treatments
Important!	Apply heat treatment only if it is bearable for the patient!	

Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, it can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.

7.1.11 Ischialgia

Definition:	Pain in ending of nervus ischiadicus, always radicular, usually caused by damaged intervertebral disk
Goal of treatment:	Analgesia, tone reduction, hyperaemisation of the affected muscles
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), manual therapy



Heat therapy – short-wave (chronic)		
Mode	Continuous mode	
Applicator	Plate electrode 120 and rubber electrode 180 x 120	
Location of treatment	Sole of foot (rubber electrode) and knee (plate electrode) – longitudinal stimulation	
Electrode-skin distance	2 cm – 3 cm	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	At least 10 treatments in series
Notes	Treatment in supported prone position	

Important!	Apply heat treatment only if bearable for the patient!
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7.1.12 Contracture

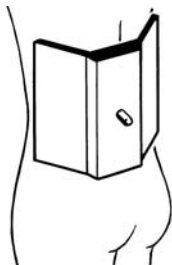
Definition:	Loss of motion in a joint due to the shortening of soft tissue
Goal of treatment:	Physiological joint motion and muscle length
Favourable combinations:	Physical therapy, electrotherapy, ultrasonic therapy, heat therapy, ice treatment, however not in case of aversion to cold (rheumatoid-arthritis).



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	Irradiation of the joint	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 – 4 cm
Duration of treatment	15 min – 20 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	3 times per week	10 – 12 treatments
Notes	Application of heat and cold help to loosen up the joints. Always apply kinesiotherapy afterwards!	
Important!	Application of heat is contraindicated in case of pain!	

7.1.13 Lumbago

Definition:	Muscle pain in the lumbar region, lumbar rheumatism
Goal of treatment:	Elimination of the painful muscle tension, tone reduction
Favorable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), heat therapy

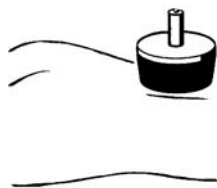


Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Diode, diplode	
Location of treatment	In the lumbar region	
Electrode-skin distance	Apply diode or diplode directly to skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	Min. 6 treatments in series
Notes	Treatment in supported prone position	

Important!	A further diagnosis is necessary if there is no improvement after the first treatments!
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7.1.14 Myalgia

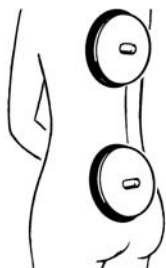
Definition:	Muscle pain
Goal of treatment:	Freedom from pain, full muscular function, tone reduction
Favorable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), heat therapy



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Diode, diplode	
Location of treatment	Above the muscle region	
Electrode-skin distance	Apply diode or diplode directly to skin	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	1 – 10 treatments
Notes	–	

7.1.15 Neuralgia / neuritis

Definition:	Nerve pain, nerve inflammation. While neuritis is characterized by clear symptoms of dysfunction, neuralgia refers to conditions where pain is primary, normally during the night.
Goal of treatment:	Pain relief, acceleration of healing and regeneration without loss of function, inflammation stop
Favorable combinations:	Galvanisation, hydroelectric one, two, four-cell or full bath, iontophoresis, heat therapy, ultrasonic therapy



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diplode	
Location of treatment	Longitudinal stimulation in nerve end	
Electrode-skin distance	Active: 2 cm – 4 cm	Passive: 2 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	Acute: Dosage 1
Treatment interval	Every other day	12 treatments

Short-wave treatment relieves tension in muscles and connective tissue. At dosage of 1, can also be applied for 2 – 3 minutes in inflammatory condition. The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended.

7.1.16 Frozen shoulder

Definition:	Shoulder pain accompanied by limitation of movement
Goal of treatment:	Freedom from pain, stimulation of perfusion, full joint movement
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), exercise. In case of acute pain, cryotherapy and immobilization with slight abduction is favourable.



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diplode	
Location of treatment	On both sides of the joint	
Electrode-skin distance	Active: 2 cm – 3 cm	Passive: 2 cm – 3 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	2 times per week	10 – 15 treatments
Important!	Contraindication: Heat therapy in all acute phases!	

7.1.17 Periostitis

Definition:	Cortical osteitis
Goal of treatment:	Pain relief, inflammation stop
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), ice treatment, dressing with ointment containing NSAID (e.g. Voltaren Emulgel)



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diplode	
Location of treatment	On both sides of the bone	
Electrode-skin distance	Active: 2 cm	Passive: 2 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Daily	10 – 15 treatments
Important!	Contraindication: Heat therapy in all acute phases!	

7.1.18 Raynaud's disease

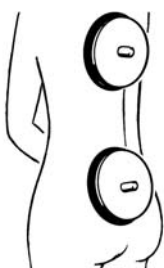
Definition:	Acute arterial blood supply in the fingers (angiospasm)
Goal of treatment:	Reduction of the frequency, intensity and duration of the attacks
Favourable combinations:	Heat therapy, electrotherapy, physical exercises, warm hand baths



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes / plate and rubber electrode / diode	
Location of treatment	On both sides of the hand or from the shoulder blade to the hand	
Electrode-skin distance	Active: 2 cm	Passive: 2 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	2 – 3 times per week	10 – 12 treatments
Notes	Treatment only in inflammation-free stage, as accompaniment to kinesiotherapy. Begin with small dosage (1 – 2), after 5 – 8 treatments, increase to dosage level 3 if necessary.	

7.1.19 Spondylosis / osteochondrosis

Definition:	Arthrosis of the vertebral bodies, degeneration of the intervertebral disks
Goal of treatment:	Freedom from affliction, retardation of degeneration, muscle relaxation, stimulation of perfusion
Favourable combinations:	Ultrasonic therapy, electrotherapy (combined therapy), massage



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diode	
Location of treatment	Above the spine	
Electrode-skin distance	Active: 3 cm – 4 cm	Passive: 3 cm – 4 cm
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	15 – 20 treatments

7.1.20 Sudeck's dystrophy

Definition:	Fracture disorder, healing decompensation; Dystrophy refers to a dystrophic alteration of the extremities occurring especially after fractures and operations.
Goal of treatment:	Slow, careful improvement of the metabolism of the extremity. Prevention of atrophy and stiffness of joints.
Favourable combinations:	At the beginning, ice and ice immersion baths and carefully executed physical therapy exercises. Ultrasonic therapy, cryotherapy, electrotherapy, exercises in water bath below the pain threshold



Heat therapy – short-wave (only chronic afflictions: stage 3 and 4)		
Mode	Continuous mode	
Applicator	diode, diplode	
Location of treatment	Segmental, local: after a few treatments according to the subjective feeling of the patient	
Electrode-skin distance	Active: 1 cm	
Duration of treatment	3 min – 6 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	3 times per week	10 – 12 treatments
Important!	Heat therapy only if bearable and never in acute phase!	

7.1.21 Tendovaginitis

Definition:	Inflammation of tendon and sheath Painful grating or chafing of the affected tendon after overstraining or dull trauma
Goal of treatment:	Inflammation stop, pain relief, free movement function
Favourable combinations:	Ultrasonic therapy, electrotherapy (iontophoresis), immobilization. In acute phase cryotherapy can be attempted. Physical therapy with stretching exercises. Rubbing with ointment containing heparin or NSAID can be attempted.

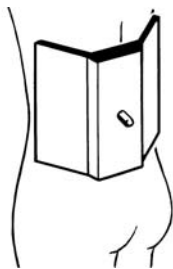


Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes / diode	
Location of treatment	Above the inflammation on both sides of the lower arm	
Electrode-skin distance	Active: 1 cm – 2 cm (small plate electrode)	Passive: large rubber electrode under the arm / hand
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Daily	15 – 20 treatments

Notes	In subacute phase: Pulsed mode dosage 1 (15 W effective)
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7.1.22 Cervical syndrome

Definition:	Post-traumatic neck syndrome. Refers to afflictions beginning in the cervical spine that can emanate into the shoulder muscles or arms
Goal of treatment:	Pain relief, stimulation of perfusion, specific relaxation and stretching of tense muscle groups.
Favourable combinations:	Electrotherapy/iontophoresis, heat therapy, ultrasonic therapy/ combination therapy, fango packs and massage.



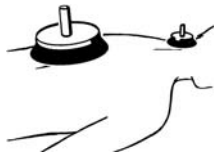
Heat therapy – short-wave (chronic affliction)		
Mode	Continuous mode	
Applicator	Diode / dipole	
Location of treatment	3 rd cervical vertebra toward caudal	
Electrode-skin distance	Full contact	
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	Every other day	5 – 10 treatments
Notes	Short-wave treatment relieves tension in muscles and connective tissue.	
Important!	Apply heat treatment only if it is bearable for the patient!	

7.2 Dermatological indications

- Inflammatory and purulent conditions such as furuncles, carbuncles, sweat gland abscesses, paronychia and panaris can be favourably treated with **high-frequency heat therapy**. In the acute stage the inflammation should be stopped or suppressed. At a later stage, colliquation should be accelerated.
- In dermatology, the use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended for treatment.
- As the condition improves, continue the treatment until the wound is fully closed.

7.2.1 Furuncle, carbuncle

Definition:	Inflammation of the hair follicle [carbuncle: dense group of furuncles]
Goal of treatment:	Quick healing (i.e. acceleration of colliquation)
Favourable combinations:	Short-wave or microwave therapy is the preferred method. UV-radiation, hot immersion or partial baths with addition of chamomile or arnica



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	Above inflammation	
Electrode-skin distance	Active: 1 cm (small electrode plate above the inflammation focus)	Passive: 4 cm with larger electrode
Duration of treatment	1 min – 2 min	
Treatment dosage	Dosage: 1	
Treatment interval	Daily	1 – 2 treatments
Notes	<p>Can also be treated well with coil electrodes.</p> <p>In the beginning stage (small boil) it is often possible to achieve improvement with one treatment.</p> <p>In the advanced stage, the colliquation takes place in the direction chosen during the application. This can be used to good advantage with nose furuncles. Deep furuncles that are not open can be treated 2 minutes, ESD 2 cm.</p> <p>Auditory canal furuncle:</p> <p>ESD afflicted ear: 1.5 cm, press against auricle</p> <p>ESD healthy ear: 3 cm with larger electrode</p>	
Important!	<p>Higher and longer dosages involve the danger of spreading! With open furuncles the wound must be dry; otherwise there is danger of being burned. Manual manipulations are contraindicated!</p>	

7.2.2 Frostbite

Definition:

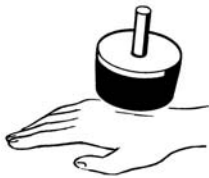
Tissue damaged by cold, perniosis

Goal of treatment:

General warming, stimulation of perfusion

Favourable combinations:

Heat therapy, ultrasonic therapy, electrotherapy (iontophoresis), baths with oak bark as medicinal additive



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / rubber electrodes / diode	
Location of treatment	Above affected areas / eddy-current electrode in contact with skin	
Electrode-skin distance	Active: 2 cm – 3 cm	Passive: 6 cm
Duration of treatment	5 min – 8 min fresh (early treatment)	10 min old (late treatment)
Treatment dosage	Dosage: 1 fresh (early treatment)	Dosage: 1 – 2 old (late treatment)
Treatment interval	Daily	10 – 15 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended. In case of fresh frostbite, treat with max. 20 W effective power.	

7.2.3 Skin injuries

Definition:

Open legs (stasis ulcer), open wounds, bedsores (decubitus)

Goal of treatment:

Stimulation of perfusion

Favourable combinations:

Electrotherapy, heat therapy, baths with medicinal additives



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	diode	
Location of treatment	Above affected areas	
Electrode-skin distance	1 cm	
Duration of treatment	10 min – 15 min	
Treatment dosage	Dosage: 1 10 W – 20 W effective power	
Treatment interval	Daily	10 treatments

Notes	Upon improvement, continue treatment until wound is closed
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7.2.4 Hidradenitis

Definition: Sweat gland abscess

Goal of treatment: Quick healing

Favourable combinations: Short-wave or microwave therapy is the preferred method



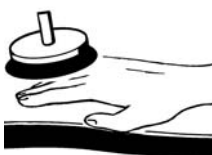
Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode	
Location of treatment	In the axilla	
Electrode-skin distance	Active: 1 cm (small plate electrode above the inflammation focus) diode in contact with skin	Passive: 4 cm with larger electrode
Duration of treatment	10 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	Daily	10 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended	

7.2.5 Panaritium

Definition: Whitlow, purulent inflammation on fingers and hand due to infection with suppuratives

Goal of treatment: Inflammation stop

Favourable combinations: Short-wave therapy is the preferred method



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / rubber electrodes / diode	
Location of treatment	Above inflammation – Passive rubber electrode under the hand	
Electrode-skin distance	Active: 2 – 3 cm (small plate electrode above the inflammation focus)	Passive: 3 cm with rubber electrode
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 2	

Treatment interval	Daily	5 – 12 treatments
Notes	The use of coil (induction-field) electrodes rather than capacitor (dielectric-field) electrodes is recommended	

7.3 Gynaecology

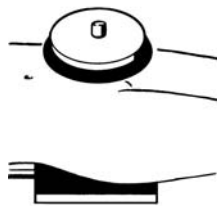
In gynaecology, high-frequency therapy is used especially for stimulation of resorption and perfusion in case of chronic adnexitis and non-inflammatory disorders in the lesser pelvis.

Warning No local treatment during pregnancy or menstrual phase!



7.3.1 Adnexitis (chronic)

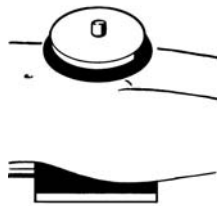
Definition:	Inflammation of the ovaries and uterine tube
Goal of treatment:	Acceleration of healing processes, stimulation of perfusion
Favourable combinations:	Acute: absolute bed rest, ice pack, cold damp compresses Chronic: mud applications



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and under the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	5 – 10 treatments
Notes	–	
Important!	No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!	

7.3.2 Amenorrhoea, dysmenorrhoea, ovarian insufficiency

Definition:	Absence of menstruation, painful menstruation, insufficient function of ovaries
Goal of treatment:	Regular function of ovaries, painless menstruation
Favourable combinations:	Physical therapy for neurohumoral regulation, mud baths, massage of connective tissue



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and under the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode under the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2 – 3	
Treatment interval	3-times per week	5 – 10 treatments
Notes	Begin: 6 days after menstruation	
Important!	No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!	

7.3.3 Mastitis

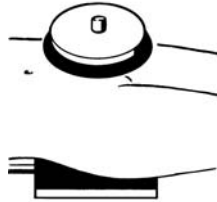
Definition:	Inflammation of mammary glands
Goal of treatment:	Stop inflammation



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Diplode, diode or plate electrodes	
Location of treatment	Above breast	
Electrode-skin distance	Diplode, diode: full contact Active (ventral): 3 cm – 5 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm (shoulder blade)
Duration of treatment	1 – 2 min (for resorption of fresh infiltrates) 5 – 10 min (to stimulate colliquation in chronic afflictions)	
Treatment dosage	Dosage: 1 (for resorption of fresh infiltrates) Dosage: 2 (to stimulate colliquation in chronic afflictions)	
Treatment interval	Daily	5 – 10 treatments

7.3.4 Myometritis (chronic)

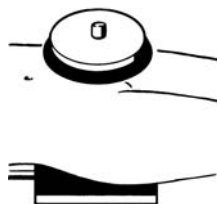
Definition: Inflammation of uterine muscles
 Goal of treatment: Accelerate healing, stimulation of perfusion



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and beneath the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the inflammation focus)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	Every other day	5 – 10 treatments
Important!	No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!	

7.3.5 Parametrium

Definition: Alteration of the female pelvic connective tissue
 Goal of treatment: Stimulation of perfusion, relaxation of the smooth uterine suspensory ligaments
 Favourable combinations: Hip baths for increasing temperature with additives such as natural mud, massage of connective tissue



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes, rubber electrode	
Location of treatment	In the area of the organ to be stimulated and beneath the buttocks	
Electrode-skin distance	Active (ventral): 2 cm – 4 cm (plate electrode above the organ to be stimulated)	Passive (dorsal): 4 cm – 5 cm with rubber electrode beneath the patient
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	3 times per week	5 – 10 treatments
Important!	No local treatment during pregnancy or menstrual phase! Special attention required during pregnancy!	

7.4 ENT / dentistry and oral medicine

HF treatment of ear, nose and throat symptoms:

Especially subacute and chronic inflammations in the area of the paranasal sinuses and the external auditory canal are important indications for HF treatment. An acute middle ear infection is a known contraindication for any local application of heat.

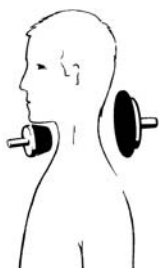
HF treatment of dental, oral and mandibular symptoms:

Indicated especially after tooth extractions and in case of disorders of the mandibular joint. Warming of the external oral cavity and the proper oral cavity can also be achieved with HF heat therapy.

- Avoid prolonged transverse irradiation through the skull due to impact on base of brain!
- Short-wave treatment is recommended for polypous conditions. Empyemas, however, should not be treated in this way!
- Never under (or immediately after) local anaesthesia!
- Caution where larger metal parts, fillings, bridges or metal bars are present - resonance heating possible! Therefore, monitor heat conditions during the initial phase of the treatment and stop the short-wave application immediately if heat is felt!

7.4.1 Laryngitis

Definition:	Inflammation of the voice box without specific irritants
Goal of treatment:	Freedom from affliction, clear voice, stimulation of local perfusion
Favourable combinations:	Inhalation therapy: ultrasonic aerosol therapy, damp-warm throat compress



Heat therapy – short-wave		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode (full contact)	
Location of treatment	At level of thyroid cartilage and in the neck / eddy-current electrode in contact with skin	
Electrode-skin distance	Active: 1 cm – 4 cm	Passive: 5 cm
Duration of treatment	1 min – 3 min	
Treatment dosage	Dosage: 1	
Treatment interval	Daily	6 treatments
Notes	Heat therapy in acute stage	
Important!	Allow voice to recover fully, no whispering!	

7.4.2 Otitis media (chronic)

Definition:	Middle ear infection
Goal of treatment:	Elimination of pain, acceleration of healing
Favourable combinations:	–



Heat therapy – short-wave (not in acute phase)		
Mode	Pulsed mode	
Applicator	Plate electrodes / diode (full contact)	
Location of treatment	Afflicted ear (small electrode – press against auricle) and healthy ear (large electrode)	
Electrode-skin distance	Active: 2 cm (afflicted ear)	Passive: 3 cm – 4 cm (healthy ear)
Duration of treatment	2 min – 5 min	
Treatment dosage	Dosage: 1 – 2	
Treatment interval	2 times per week	6 treatments
Notes	Heat therapy after perforation of the eardrum and in case of residual cavities after radical operations	
Important!	Wherever possible, avoid extended transverse irradiation through the skull (due to impact on base of brain).	

7.4.3 Sinusitis max.

Definition:	Inflammation of maxillary sinus
Goal of treatment:	Stimulation of perfusion, loosening of mucus, healing, improving resistance
Favourable combinations:	Heat therapy, ultrasonic therapy, inhalation therapy with isotonic saline solution



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes (small) / diode	
Location of treatment	Plate electrodes: Apply on both sides of the face up to the level of the nasal root	
Electrode-skin distance	Active: 2 cm (small plate electrode)	Passive: 3 cm
Duration of treatment	Acute: 1 min – 3 min	Chronic: 5 min – 10 min
Treatment dosage	Acute: Dosage: 1	Chronic: Dosage: 2 – 3
Treatment interval	Daily	Chronic: 10 – 12 treatments
	Acute: 6 treatments	
Notes	Short-wave is more effective than light box. Short-wave treatment is recommended for polypous conditions. Empyemas, however, should not be treated in this way!	
Important!	Allow decongestion of mucous membranes before applying treatment!	

7.5 Internal medicine, urology

Rheumatic disorders (see *Orthopaedics – Surgery / Neurology* on page 19)

Disorders of the respiratory tract and the digestive tract

- Combination with simultaneous aerosol inhalation in cases of chronic bronchitis. Do not apply short waves during fever attacks!
- Use heat therapy only at the postictic stage. Note that the liver is better supplied with blood when the organ is in horizontal (not vertical) position. Never irradiate acute hepatitis conditions (danger of life-threatening exacerbation)!
- Heat therapy after the inflammatory exudate has decreased. No heat therapy in cases of tuberculosis!
- Genitals should be kept outside of the capacitor (dielectric) field!

7.5.1 Bronchitis (chronic)

Definition:	Inflammation of the bronchial mucous membrane
Goal of treatment:	Purulent chronic bronchitis: Healing (combat infection, loosening of mucus) Obstructive chronic bronchitis: Removal of the bronchial obstruction
Favourable combinations:	Heat therapy, ultrasonic therapy; instruction in how to cough effectively, inhalation therapy: aerosol therapy with table salt, Sultanol® or Atrovent® inhalation solution



Heat therapy – short-wave		
Mode	Continuous mode	
Applicator	Plate electrodes (large) / diode	
Location of treatment	Transverse irradiation of the thorax, apply diode directly from ventral	
Electrode-skin distance	Ventral: 4 cm	Dorsal: 4 cm
Duration of treatment	In case of purulent mucus: 3 min	Obstructive chronic: 8 min – 12 min
Treatment dosage	In case of purulent mucus: Dosage: 1	Obstructive chronic: Dosage: 2 – 3
Treatment interval	Every other day	Chronic: 12 treatments
	Purulent: 6 treatments	
Notes	If possible, combine with simultaneous aerosol inhalation in case of chronic bronchitis	
Important!	As long as purulent mucus is present, treat only with dosage 1; later with dosage 2! Do not apply short waves during fever attacks!	

7.5.2 Cholelithiasis

Definition: Gallstones

Goal of treatment: Spasmolysis, pain relief, stimulation of perfusion

Favourable combinations: Heat therapy, ultrasonic therapy, massage of connective tissue, series of increasing foot baths with subsequent abdominal pack



Heat therapy – short-wave (for post-operative complaints)		
Mode	Continuous mode	
Applicator	Plate electrodes (large) – rubber electrode	
Location of treatment	Transverse irradiation of liver region	
Electrode-skin distance	Ventral: 3 cm – 4 cm	Dorsal: 6 cm – 7 cm (rubber electrode and terry towels)
Duration of treatment	Postoperative: 3 min	
Treatment dosage	Dosage: 2	
Treatment interval	Every other day	10 – 12 treatments
Notes	The short-wave treatment is not the primary method for gallstones and dyskinesia of the bile ducts. It serves only to positively support neural therapy.	

7.5.3 Hepatitis

Definition: Inflammation of the liver

Goal of treatment: Healing, stimulation of perfusion of liver and general well-being

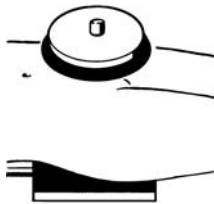
Favourable combinations: Hot roll above the liver, foot and arm baths, brush massage to stimulate peripheral perfusion, massage of connective tissue, breathing therapy



Heat therapy – short-wave (posticteric stage)		
Mode	Continuous mode	
Applicator	Plate electrodes – rubber electrode / diplode (full contact)	
Location of treatment	Above the liver	
Electrode-skin distance	Ventral: 2 cm – 4 cm or diplode (full contact)	Dorsal: 6 cm (rubber electrode)
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	Every other day	12 treatments
Notes	Use heat therapy only in the posticteric stage. Note that the liver is better supplied with blood when the organ is in horizontal (not vertical) position.	
Important!	Never irradiate acute hepatitis conditions (danger of life-threatening exacerbation)! No hot full baths (this results in significant reduction of perfusion of the liver)!	

7.5.4 Constipation

Definition:	Constipation
Goal of treatment:	Regular stool with normal consistency, improvement of tone and function of stomach muscles, stimulation of intestinal peristalsis
Favourable combinations:	Heat therapy, ultrasonic therapy, electrotherapy, colon massage, connective tissue massage, hip baths to raise temperature



Heat therapy – short-wave (in case of spastic constipation)		
Mode	Continuous mode	
Applicator	Plate electrodes / rubber electrodes	
Location of treatment	Above abdomen and lumbar region	
Electrode-skin distance	Ventral: 4 cm – 5 cm	Dorsal: 5 cm (rubber electrode)
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 2	
Treatment interval	Daily	5 treatments
Important!	Exact diagnosis necessary before beginning treatment! Omit specific disorders due to danger of colliquation of tissue!	

Increased effectiveness in combination with spasmolytic, which should be applied intravenously or rectally before treatment.

7.5.5 Unspecific exudative pleurisy (chronic)

Definition:	Inflammation of the pleura
Goal of treatment:	Stop inflammation without retention of calluses, adhesive bands and breathing impediments
Favourable combinations:	Breathing therapy, drainage position, breathing-thorax exercises, Kneipp pack, heat therapy



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes / diode (full contact)	
Location of treatment	Ventral and dorsal from thorax	
Electrode-skin distance	Ventral: 5 cm	Dorsal: 5 cm
Duration of treatment	2 min – 5 min	
Treatment dosage	Dosage: 1 – 2 (increase dosage if tolerance is good)	
Treatment interval	2 times per week	10 treatments
Notes	Heat therapy after the inflammatory exudate has decreased. Heat therapy accelerates the resorption and reduces shrinkage and thickening. In cases of dry pleurisy, the treatment is used with various degrees of success.	

Important!	Do not use heat therapy and UV radiation in cases of tuberculosis!
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7.5.6 Prostatitis and vesiculitis

Definition:

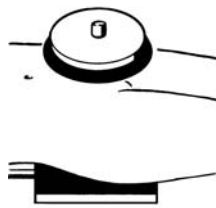
Inflammation of the prostate gland and the seminal gland

Goal of treatment:

Healing, freedom from affliction, stop inflammation

Favourable combinations:

Short-wave microwave therapy, warm to hot hip baths



Heat therapy – short-wave (not in acute phase)		
Mode	Continuous mode	
Applicator	Plate electrodes – rubber electrode / diode	
Location of treatment	Active (smaller electrode) above the perineum, passive above the sacrum, diode locally from direction of perineum	
Electrode-skin distance	Active above perineum: 2 cm	Passive above sacrum: 3 cm
Duration of treatment	5 min – 10 min	
Treatment dosage	Dosage: 1 – 3	
Treatment interval	2 – 3 times per week	10 – 15 treatments
Notes	Genitals should be kept outside of the capacitor (dielectric) field	
Important!	Acute: No short-wave therapy!	

8 Individual Programs

You do not have to set frequently applied forms of therapy every time you want to use them – you can simply save them as individual programs. You may save a total of 20 individual programs and restart them as well as delete and overwrite them.

8.1 Setting program values

The image below shows the main menu after the unit is switched on. Proceed as follows to set the program values:



- (1) Select successively the parameters **Hz**, **Mode** and **min.** to set the corresponding program values.
- (2) Select the function **Prog.** from the **display <2>**.

The extra menu for the individual programs containing the following functions is displayed:



- (3) Select one of the programs **P01** to **P20**.
- (4) Select the function **Store** to save the respective program.

The selected settings are saved in the respective program and can now be accessed.

8.2 Call Program

To call a stored program proceed as follows:

- (1) Prepare instrument and patient (refer to *Preparations* on page 13).
- (2) Select the function **Prog.** on the **display <1>**.

The menu containing the individual programs is displayed:



- (3) Select one of the programs **P01** to **P20**.
- (4) Select the function **Select**.

The selected program is active and its parameters appear on the **display <2>**.

- (5) Select the desired OUTPUT POWER. Therapy time elapses.
- (8) Press the **stop button <4>** to interrupt the treatment or wait until the treatment duration has elapsed (signal tone).
- (6) Remove the electrodes and ask the patient how he feels.

8.3 Delete Program

Proceed as follows to delete a program:

- (1) Select the function **Prog.** from the **display <2>**. The menu containing the individual programs is displayed.
- (2) Select one of the programs **P01** to **P20**. The parameters of the program are displayed.
- (3) Select the function **Delete**.

Now the selected program is deleted and parameters can be newly assigned.

9 Basic settings

In the basic settings, you can set different parameters that are rarely altered.



Unless you alter them, the indicated parameters are set to the following default values:

Parameter	Default value	Range
Pulse duration	400 μ s	200 - 600 μ s (default: 400 μ s)
Volume tone	50 %	0 – 100 %
Service code	0	
LCD language	any	DE (German), EN (English), ES (Spanish), FR (French), IT (Italian), PT (Portuguese), RU (Russian), TR (Turkish)
LCD brightness	70 %	10 - 100 %
LCD contrast	70 %	0 - 100 %

9.1 Changing the basic settings

To alter a parameter, proceed as follows:

- (1) Switch off the instrument.
- (2) Press the **data selector <2>** and hold it down.
- (3) Switch on the instrument with the **power switch <1>** and wait (with the data selector depressed) until the basic settings menu is displayed.
- (4) Turn the data selector until the desired parameter line is selected.
- (5) Press the data selector. The value to be changed in this line is selected.
- (6) Set the desired parameter value by turning the data selector.
- (7) Confirm the set value by pressing the data selector. The entire line is then selected again.

10 General Notes

The **PHYSIOTHERM-S** short-wave therapy unit and the accompanying components and individual elements fulfil singly and as a unit the currently valid safety standards and comply with the stipulations of IEC 601 and the medical products regulations.

The unit and its external components (accessory elements) are safe if used properly and in compliance with the explanations and instructions provided in this documentation.

Nevertheless, the unit or its external components can pose dangers. Therefore, we urgently recommend that anyone operating the short-wave therapy unit become aware of the potential dangers of the unit and its external components before beginning work.

Please read and observe all safety instructions in these *Operating Instructions*.

10.1 Responsibilities

Only doctors, physiotherapists or trained assistants under the direction of a doctor or physiotherapist, may use the short-wave therapy unit!

Before treating a patient, an anamnesis must be performed by the attending physician, during which the patient must be consulted concerning possible contraindications!

An accurate diagnosis is always required for each treatment!

All service work (safety inspections, voltage conversion between 115 V and 230 V, repairs) must be performed only by service technicians who have been authorized by the manufacturer!

For your own safety, please read the following safety instructions carefully and observe the information contained therein!

Perform all work

- according to the explanations in this instruction manual,
- correctly and as precisely as possible and
- in compliance with the relevant safety and accident prevention regulations!

10.2 Personal safety

In case of improper or unauthorized use of the unit, the operator, the patient or other persons may be subjected to the danger of electric shock due to high voltage produced by the unit, the danger of influence on active implantations by magnetic fields produced by the unit and the danger of being burned due to erroneously positioned electrodes or false parameters such as the duration of treatment, power output or operating mode!

Before operating the unit, please read this instruction manual carefully and observe the information contained therein! Pay special attention to the list of contraindications (refer to *Contraindications* on page 2).

Before operating the unit each time, check whether

- the unit has been correctly connected to the building's power supply,
- the unit has been set up so that it is free-standing and the patient is not in direct contact with metal objects such as heating radiators, metal beds or other equipment,
- the insulation of the power supply and electrode connection cables is not damaged,
- the electrode connection cable is connected properly and is not cross-routed (which may cause capacitive short circuits),
- only accessories (cables, electrodes) approved by the manufacturer are connected,
- the patient to be treated (and the personnel) have removed all electric devices (e. g. hearing aids, electrotherapy electrodes, mobile telephones) and all conductive objects (e. g. rings, chains, watches, earrings or other jewellery, eyeglasses) and that they are not in the immediate vicinity of the unit,
- the patient is in a composed state and the bodily areas to be treated are dry on the exterior,
- the electrodes are positioned according to the doctor's instructions (to be checked by the doctor or physiotherapist if applied by assisting personnel),
- there is no danger of unwanted local warming due to electrode constrictions and
- no other persons are located within 2 meters of the unit!

Before using the unit, speak with the patient to make sure that

- he is in a comfortable position during the entire treatment,
- he is not in contact with the unit, the electrode connection cable, the electrodes or other devices or metal objects and
- he should (and can) let you know if he feels unwell!

Before using the unit, determine the maximum nominal output power of the respective applicators in order to avoid overheating of tissue!

At regular intervals during the treatment, check

- that the unit is functioning properly,
- for moisture development (perspiration) in the area of the electrodes. The affected parts of the body should be unclothed during treatment, since accumulation of moisture on the skin or in folds can cause local overheating of the skin. This is especially important in case of clothing made of moisture-resistant fabric such as silk or synthetic fibres!
- whether the patient feels well. The output power must always be set according to the subjective response of the patient! Particular care is to be taken with patients who have a reduced capacity for heat perception!

After the treatment, ask the patient about his tolerance of the treatment and visit the treating doctor or physiotherapist.

10.3 Protection of unit

Improper installation, operation or maintenance of the short-wave therapy unit may result in malfunctions of this unit or other devices!

Therefore, observe the following instructions in order to prevent malfunctions:

- In order to prevent electromagnetic disturbances, place the unit at least 6 meters from any other devices! Also make sure that there is sufficient distance between the unit and power supply or data cables in walls, ceilings and floors, since the electromagnetic radiation from the unit can pass these essentially without hindrance!
- In selecting the location for the unit, make sure that the patient has contact during the treatment to the non-earthed application element and, due to equalizing currents in case of differing potentials, that the patient is never in contact with metal elements (especially if they are earthed), such as heating radiators, metal beds or other earthed devices!

Before connecting the unit, make sure that

- the voltage rating on the safety label corresponds to the available system voltage,
- the frequency rating on the rating plate corresponds to the system frequency,
- an earthed (!) socket outlet with earthing contact is available for connecting the unit,
- the routing of the power cable from the unit to the socket outlet with earthing contact does not pose a danger for personnel or the patient
- the building's power supply is designed for the comparatively high (possibly additional) power input of the unit (~ 1500 VA) and the line is sufficiently protected in accordance with regulations!

Do not connect the unit to the power supply until these requirements have been fulfilled!

Before putting the unit into operation, check to make sure that the electrode connection cable and the electrodes are undamaged and have been connected correctly to the unit!

Never operate the unit with open outputs (i.e. without electrodes)!

Do not operate the unit for an extended period with no load (without a patient), especially in coil (induction field) mode! When operating the unit without power output, induction field electrodes could be destroyed due to overheating!

- Pay attention to the routing of the electrode connection cables. These must always be in the air and must never lie on surfaces!
- Keep chip cards, magnetic cards, audio and videocassettes and other data media that are susceptible to interference away from the unit!
- Clean and disinfect the unit only when the power supply is deactivated (power switch off, power plug disconnected)!
- Clean and disinfect the unit only by means of disinfection by wiping! Disinfecting by spraying can damage the unit due to penetrating moisture!
- Never clean the unit with abrasives, disinfectants or solvents that could scratch the housing or damage the unit!

11 Service, Repairs, Maintenance

The manufacturer is only obliged to guarantee the safety features of the instrument in its original state.

The instrument must be operated in accordance with the *Operating Instructions*.

Repairs to the instrument may be only performed by parties duly authorized by **PHYSIOMED ELEKTROMEDIZIN AG**. Any repairs performed by an authorized agent must be accompanied by written certification, describing the nature and extent of the repairs undertaken, as applicable with details regarding changes to nominal operating values or the operational range. The certification must also contain the date performed, the name of the repair company and the signature of the repairman.

When defective, Components affecting the safe operation of the instrument must be replaced by manufacturer's original parts.

In accordance with the law concerning medical products, the unit must be entered in a medical products log. Safety inspections and repairs must be entered with the date of performance in the medical products log.

All service (safety inspections, voltage switching between 115 V and 230 V, repairs) may be performed only by service personnel authorized by the manufacturer! Do not perform unauthorized repairs under any circumstances!

12 Cleaning and Disinfections

To clean the device:

- (1) Switch off the power switch.
- (2) Unplug the power plug from the socket before cleaning or disinfecting the unit!
- (3) Clean and disinfect the unit and accessories on all external surfaces with a slightly damp cleaning cloth. Use a commercially available cleaning agent that is intended for use in medical facilities.
- (4) Wait until the unit is completely dry before operating it again.

Under no circumstances may liquid penetrate the openings on the unit, e.g. the connecting sockets of the electrode cables! Therefore, do not use cleaning or disinfectant sprays! The unit, electrodes and cables may not be sterilized using steam or gas!

Never clean the unit with abrasives, disinfectants or solvents that could scratch the housing or damage the unit.

13 Technical Data

Protection class	I/BF
CE certification	complies with European Council Directive concerning medical devices 93/42 EEC
Class acc. to EC 93/42	Ila
Design	IEC 601-1, IEC 601-2-3, IEC 601-1-2
Mains connection	115 / 230 VAC (can be selected, refer to <i>Setting the Line Voltage</i> , page 8)
Power line frequency	50/60 Hz
Power line input	1400 VA
Line fuses	at 115 V: T 16A at 230 V: T 16A
HF nominal power	1000 W pulsed mode (at the pulse peak) 400 W continuous mode
Power setting	in 10 Watt increments (CW mode) in 50 Watt increments (pulsed mode)
Power indication	Amplitude and effective power
Working frequency	27.12 MHz +/- 0.6 %
Pulse duration	200 – 600 µs
Pulse frequency	10 – 300 Hz
Treatment duration	1 – 60 min
Dimensions¹ (W x H x D)	42,0 x 97,0 x 41,0 cm
Weight¹	60 kg
Ambient temperature²	+ 10 °C to + 40 °C (operation) - 40 °C to + 70 °C (transport and storage)
Relative humidity	30 % to 75 % (operation) 10 % to 100 % (transport and storage)
Air pressure	700 to 1060 mbar (operation) 500 to 1060 mbar (transport and storage)

¹ without electrodes, electrode arms and electrode cables

² If the unit is operated after cooling to below the freezing point, malfunctions or defects may occur due to formation of condensation water!

14 Accessories

14.1 Standard

Ref.-No.	Description	Number
00681	* Plastic plate electrode Ø 165 mm	2
00682	* Electrode connecting cable with sponge rubber covering	2
00680	Electrode arm	2
00683	Cable clamp for electrode connection cable	2
00692	* Power lead 3 m	1
00916	Operating Instructions	1

*For safety reasons, **PHYSIOTHERM-S** is to be used exclusively with original accessories. Usage of other manufacturer's accessories is at the user's risk.

14.2 Special Accessories

Ref.-No.	Description
00681	* Plastic plate electrode Ø 165 mm
00685	* Plastic plate electrode Ø 120 mm
00684	* Plastic plate electrode Ø 80 mm
00682	* Electrode connecting cable with sponge rubber covering
00688	* Rubber capacitor electrode 250 x 145 mm
00687	* Rubber capacitor electrode 180 x 120 mm
00689	Felt layer with linen bag for 1 and 2
00686	Eddy-current electrode (diplode)
00690	Eddy-current electrode (diode)
00691	Cable for eddy-current electrode
00680	Electrode arm
00683	Cable clamp for electrode connection cable
00692	* Power lead 3 m

15 Manufacturer's Recommendations

PHYSIOMED®

MANUFACTURER'S RECOMMENDATIONS

SAFETY REGULATIONS CONTROL

according to Medical Devices Directive

UNIT: **PHYSIOTHERM-S**

MANUFACTURER: PHYSIOMED ELEKTROMEDIZIN AG

Instrument has to undergo a safety regulation control every 24 months.

EXTENT:

1. Check housing, power cable, electrode connection sockets, electrode cables, plate electrodes, diploides, diodes and rubber capacitor electrodes for deformations and damages.
2. Correct function of indicators
3. Correct display of operating modes
4. Accuracy check of timer (+/- 5s), time setting
5. Correct function of power switch
6. Verification of power output using a neon indicator
7. Electrical test according to IEC 601-1

	normal condition	single fault condition
7.1 Earth leakage current	$\leq 0.5 \text{ mA}$	$\leq 1.0 \text{ mA}$
7.2 Housing leakage current	$\leq 0.1 \text{ mA}$	$\leq 0.5 \text{ mA}$
7.3 Protective conductor resistance	100 mOhm	

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